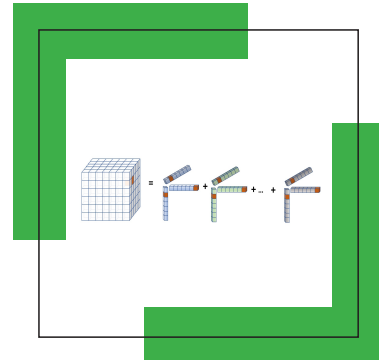


# Mathematical Foundations and Algorithms for Tensor Computations

**MAY 3 - 7, 2021**



## Scientific Overview

This workshop aims to bring together researchers with different expertise to exchange ideas on designing computational methods for various tensor problems. One of the main features will be a focus on rigorous algorithms for which one may guarantee convergence to a global solution under reasonable conditions. Topics will include provable algorithmic guarantees in terms of computational efficiency and robustness, algorithmic techniques like spectral methods, iterative methods for nonconvex optimization, and powerful convex relaxation hierarchies like sum-of-squares, etc, where correctness guarantees may be established under suitable assumptions motivated by applications.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

## Long Program Schedule

**This workshop is part of the long program on “Tensor Methods and Emerging Applications to the Physical and Data Sciences.”**

- Tensor Methods and Emerging Applications to the Physical and Data Sciences Opening Day : March 8, 2021
- Tensor Methods and Emerging Applications to the Physical and Data Sciences Tutorials : March 9 - 12, 2021
- Workshop I: Tensor Methods and their Applications in the Physical and Data Sciences : March 29 - April 2, 2021
- Workshop II: Tensor Network States and Applications : April 19 - 23, 2021
- **Workshop III: Mathematical Foundations and Algorithms for Tensor Computations : May 3 - 7, 2021**
- Workshop IV: Efficient Tensor Representations for Learning and Computational Complexity : May 17 - 21, 2021
- Tensor Methods and Emerging Applications to the Physical and Data Sciences Culminating Retreat at Lake Arrowhead : June 6 - 11, 2021

## Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM’s mission, and we welcome their applications.

## Organizers

Lek-Heng Lim (University of Chicago), Jiawang Nie (UCSD), Norbert Schuch (Max Planck Institute), Anna Seigal (Oxford), André Uschmajew (Max Planck Institute), and Aravindan Vijayaraghavan (Northwestern).

## Confirmed Speakers

**Paul Breiding** (Technische Univ. Berlin); **Rong Ge** (Duke); **Venera Khoromskaia** (Max-Planck-Institut); **Kaie Kubias** (Aalto Univ.); **Mateusz Michalek** (Polish Academy of Sciences); **Jiawang Nie** (UCSD); **David Perez-Garcia** (Univ. Complutense de Madrid); **Anh-Huy Phan** (Skolkovo Institute of Science and Technology); **Yang Qi** (U. Chicago); **Maksim Rakhuba** (ETH Zurich); **Elina Robeva** (UBC); **Tselil Schramm** (MIT); **Nikos Sidiropoulos** (U. Virginia); **Madeleine Udell** (Cornell); **Bart Vandereycken** (Université de Genève); **Nick Vannieuwenhoven** (KU Leuven); **Alex Wein** (NYU); **Andrea Zakrzewski** (Northwestern)



For more information, visit the program webpage:  
[www.ipam.ucla.edu/tmws3](http://www.ipam.ucla.edu/tmws3)